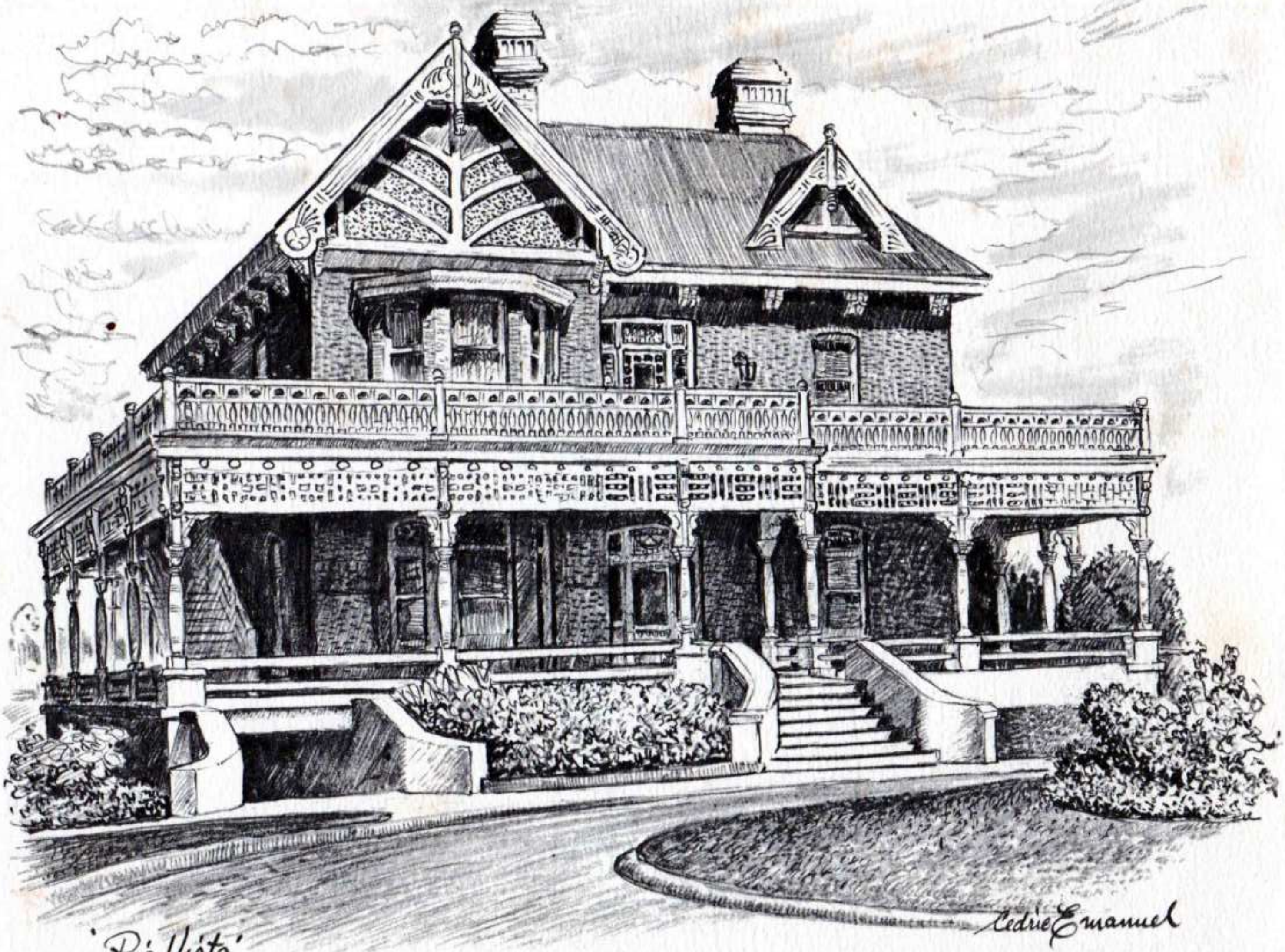
Chaffey's Kingdom

The Sunraysia Story





'Rio Vista'
The Chaffey Home MILDURA

Chaffey's Kingdom

In 1887 the Chaffey brothers, two Canadians who had established a reputation as successful irrigation engineers in California, selected Mildura in Victoria and Renmark in South Australia as sites for the irrigation settlements they proposed to set up in Australia. They sensed the irrigation potential of the Murray River, then widely known as the Mississippi of Australia.

Regions that in 1887 provided a living for only a few hundred sheep station workers are now home to 60 000 people and have 22 500 hectares of irrigated vineyards, orchards and citrus groves. Their production includes 65 000 tonnes of dried vine fruits (of Australia's average annual yield of 90 000 tonnes), six million bushels of citrus fruits, and a substantial volume of wine and table grapes. Their total output is worth over $60 000 000 a year.

The bulk of Australia's dried fruit goes to overseas markets, bringing valuable foreign exchange for Australia's economy. Between 70 and 80 per cent of the average annual Australian production must be sold overseas. Most of this goes to other Commonwealth countries, the Federal Republic of Germany and Japan.

Standing behind much of the industry of Chaffey's Kingdom is the Australian Dried Fruits Association, a voluntary body to which 99 per cent of all Australia's dried fruit growers belong.

The Association, financed by member levies, manages the economics of the industry, assesses and allocates the annual pack of growers, ensures that an adequate quantity is retained for Australian consumption and regulates all distribution, sales and consumption in Australia.

Vine and fruit growing is a year round job, a never ending cycle in which the skills of men maximise the bounties of nature.

Australia's dried fruit growers apply modern techniques to an industry with origins lost in antiquity. Biblical records say that Noah grew vines near the shores of the Caspian Sea. Egyptian hieroglyphics indicate that the Pharaohs enjoyed dried fruits as early as 2400 BC. King David accepted raisins in lieu of taxes. Hippocrates, the 'Father of Medicine', saw the dried grape as a 'preventative medicine against jaundice, fevers and burns'.

As civilisation spread, dried fruits spread with it, eventually to the New World. Australia's dried fruit industry came via California.

Chaffey's Kingdom is a living tribute to the value of water, properly used, in the world's

driest continent. It showed what water could do in an area one Melbourne paper described as a 'Sahara of hissing hot winds and red driving sand, a carrion-polluted wilderness'.

This booklet tells the story of how Chaffey's Kingdom became an oasis in the desert.

Chaffey is pronounced Chay-fee, with the accent on Chay.

All Mildura will be as this garden

William McGregor Paterson had little to be happy about as he trudged down the hot, dusty street of Wentworth, at the junction of the Murray and Darling Rivers, in New South Wales, one day in 1886.

As manager of Mildura Station, about 30 kilometres upstream on the banks of the Murray River, Paterson was in charge of a failing business, with nothing much to do but watch the dead and dying stock, the plague of rabbits, the crows and the dust storms. The very name of the station gave a clue as to its real nature. Some people said Mildura was an Aboriginal word for 'red rock'. Others said it meant 'sore eyes' because of the constant blight suffered by those who lived there.

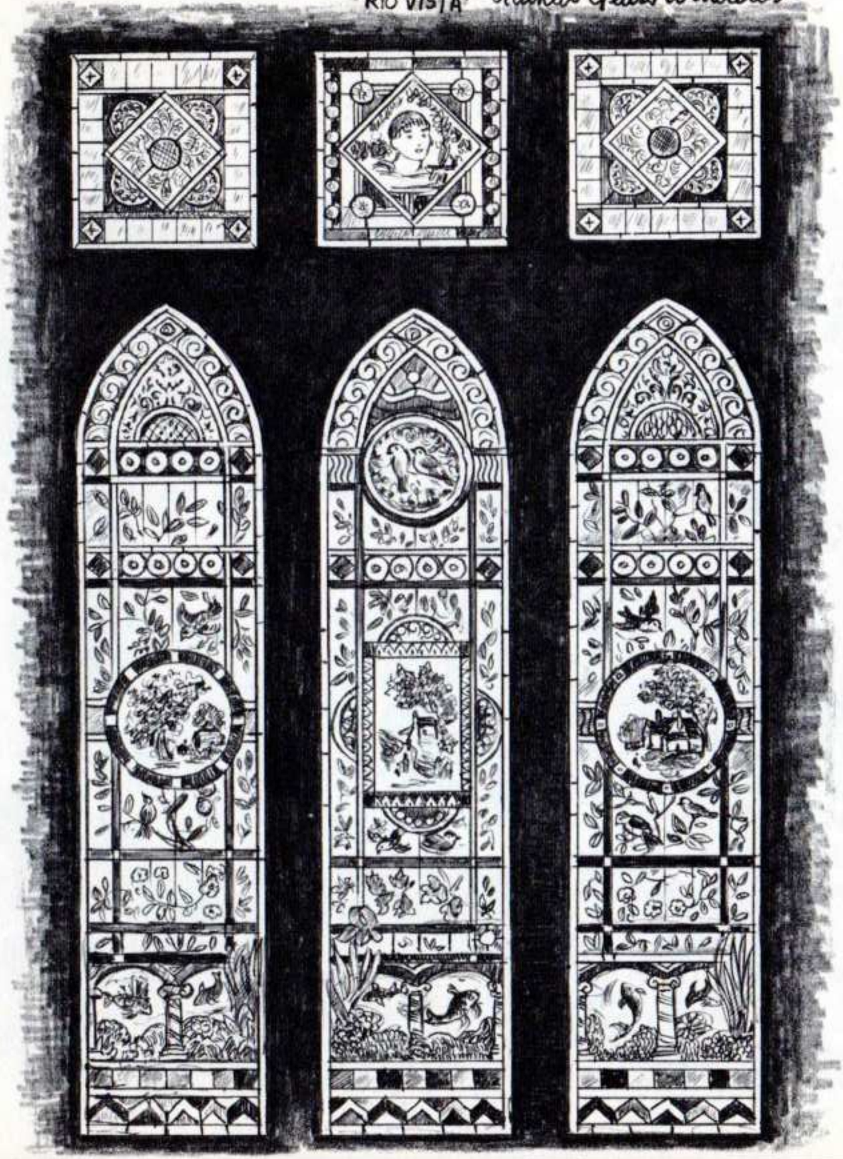
Still, Paterson was destined to become a happy man. His sudden change of fortune came when a stranger with an American accent stopped him in Wentworth, introduced himself as George Chaffey, produced a letter of introduction from a bank, and said he was a prospective buyer of the lease for Mildura Station.

'Mad!' Paterson probably thought to himself. But he soon had Chaffey on the way to the station by stage-coach to begin a three day inspection. And he gradually came more and more to suspect that the man was mad—quite mad, for Chaffey spent most of his time looking at the homestead garden, admiring the enormous bunches of Black Prince, Lady's Finger and Muscatel grapes that grew on the vines there, and the oranges, pears, mulberries and figs. Not a word did he say about sheep!

'I'll take it,' Chaffey said eventually. Now Paterson knew Chaffey was mad.

What Paterson did not realise was that in Chaffey's mind Mildura Station was already at the end of the road as a sheep property. Looking at the homestead garden, which was protected by rabbit-proof fencing and watered

'RIO VISTA' Stained Glass Windows





Murray River Cliffs

by Aboriginal women, George Chaffey declared: 'Some day the whole station will be as this garden'.

As Paterson had correctly surmised, George Chaffey knew little about sheep. But he did know a lot about irrigation. At Etiwanda, in California, the Canadian engineer and his younger brother, William Benjamin, had bought 600 hectares of desert land, built six kilometres of pipe to carry water to it, and made an oasis of four hectare fruit blocks.

Their next and much bigger undertaking was a 325 hectare project they called Ontario. It became the model irrigation colony of the United States.

Now the Chaffeys were planning to repeat the process in Australia. Once he bought Mildura Station, George Chaffey cabled his brother to sell up their American interests and come to Australia.

Australia's Mississippi

Chaffey's attention had naturally fallen upon the Murray-Darling river system, whose branches drain and water a fifth of the Australian continent.

Falling snows and sub-tropical rains all find their way into the Murray-Darling system—snow from the Australian Alps, sub-tropical rain from the creeks of western Queensland. Rain that falls within a few hours' drive of Sydney and Brisbane may irrigate the vineyards of Sunraysia and Riverland months, even years later. All the waters of the Murray-Darling system come together at Wentworth for their final progress to the sea.

Hume and Hovell discovered the Murray in their 1824 journey of exploration from southern New South Wales to Port Phillip Bay. Six years later, Captain Charles Sturt, travelling down the Murrumbidgee by boat, entered 'a broad and noble river' and named it after Sir George Murray, then Secretary of State for the Colonies. Sturt went on to explore the Murray to its mouth.

A later explorer, Major Thomas Mitchell, who always dreamed of taking home reports of lush meadows, found little joy in the country near the Murray-Darling junction, when he passed by it in 1836. He called it 'One of the most barren regions in the world'.

Joseph Hawdon, drover of cattle down the Murray to Adelaide in the late 1830s, had a better appreciation of the irrigation potential of the rivers. 'In this neighbourhood there are about a hundred thousand acres,' he wrote, 'which, at a small expense, might be flooded. Although at present producing only reeds, the soil is well adapted for wheat, and is beautifully situated for the experiment of growing rice.' Hawdon and his colleague Bonney called the Murray 'that friendly river'.

Yet the Murray-Darling system first came to be valued not for irrigation but for its transport potential. Sir Henry Fox Young, Governor of South Australia, encouraged the development of the Murray as the Mississippi of Australia. By 1886 when George Chaffey arrived on the Murray, its riverboat trade was thriving.

Riverboats plied all the rivers of the Murray-Darling system, taking away the wool from the inland stations, and bringing back all kinds of supplies. Victoria, New South Wales and South Australia all built railways to the rivers to ensure that they got their share of the Murray trade.

Although it did not have the benefit of a railway, Wentworth's position at the junction of the Murray and Darling Rivers gave it a special place in the riverboat trade. When George Chaffey arrived in the district, Mildura was nothing more than a struggling sheep station.

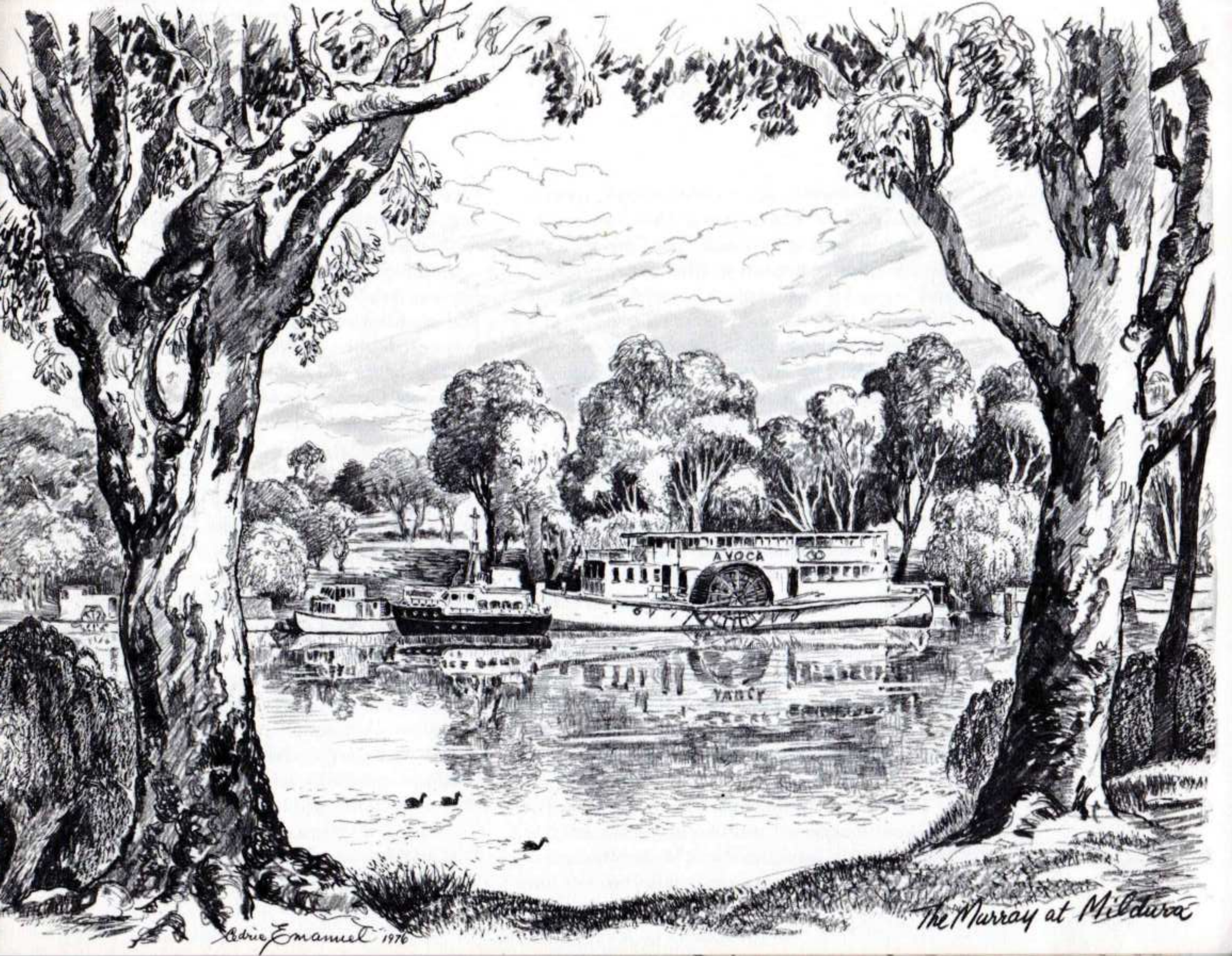
In time the riverboats were entirely displaced by the railways and more and more Australians began to see that the river's main value lay in irrigation.

Water into gold

George Chaffey's arrival was one of the first steps in Australia's development of its water resources into golden harvests.

Chaffey first heard about Victoria's irrigation potential in 1884 from a young Victorian Cabinet Minister, Alfred Deakin. Not yet thirty, Deakin, who was to become Prime Minister of Australia, visited California on a fact-finding mission. As Minister for Water Supply, he wanted to see for himself what irrigation had achieved there. He met the two Chaffey brothers, who showed him around their Ontario settlement.

Deakin's visit sparked the interest of the


AVOCA
Cedric Emanuel 1976
The Murray at Mildura

Chaffeys into coming to Victoria to start an irrigation colony there, just as they had previously come from Canada to California. George Chaffey arrived in Melbourne in 1886 and began his own exploration of the Murray River.

Chaffey took the train to Echuca and explored the Murray by riverboat as far as Swan Hill. Then he went to Adelaide and journeyed up the river to Mildura Station, which he had heard was for sale.

Chaffey expected to get every co-operation from the Victorian government. Deakin was certainly most encouraging, and signed an agreement with Chaffey that 'the Government would set aside 250 000 acres at Mildura for occupation under licence for twenty years by Chaffey Brothers, for irrigation purposes, Chaffey Brothers to have the right to construct works on any part of this area for conserving and distributing water'. The Chaffeys undertook to spend £300 000 on permanent improvements, getting title to the land progressively as the money was spent.

The agreement between Chaffey and Deakin ran into unexpected troubles in Parliament. When Deakin introduced the Water Works Construction Encouragement Bill, the Opposition accused him of giving away the people's heritage to two 'cute Yankee land grabbers'. The Opposition forced an amendment requiring that the concession be open to public tender for two months. Although he had taken the initiative, Chaffey was now told he could only go ahead if nobody made a better offer.

George Chaffey decided to forget about Victoria and went to South Australia, where he started an irrigation colony on the Murray at Renmark.

Deakin however persuaded him to come back to Victoria and go ahead with his plans at Mildura. The indenture between the Government of Victoria and the Chaffey Brothers was signed on 31 May 1887.

Expecting most of their settlers and capital from England, the Chaffeys appointed an English agent and published their famous 'Red Book', more formally called 'The Australian Irrigation Colonies'.

Settlers began to arrive in 1888 and the Chaffeys were soon deluged with enquiries. By the end of 1890, Mildura had 3 000 people, including 1 000 agricultural settlers, half of them English migrants. Vines, citrus and stone fruits had been planted in 2 500 hectares.

Engines of irrigation

The men who built Mildura soon called engines to their aid.

George Chaffey knew it would take a long time to have the necessary pumping engines made in England and shipped to the colony. So one of his first acts was to order his own design of a triple expansion pumping engine. Experts said it would never work as a direct drive for centrifugal pumps in the volume Chaffey wanted. The English makers, Tangyes, cast 'Chaffey' on the engine's side, refusing to put their own name to it. But the 'Chaffey' engine confounded the critics and from 1889 to 1959 it pumped water ceaselessly from King's Billabong into Mildura's irrigation channels.

Less complicated pieces of machinery could do some of the work. To roll down the stunted trees of the Mallee scrub Chaffey's men needed nothing more than a Mallee roller, a big log rigged up with an axle and drawbar so it could be dragged across the countryside to flatten everything in its path.

Dust and smoke soon hung over the developing irrigation area as the Mallee rollers did their work and gangs of men moved in to grub out the Mallee roots.

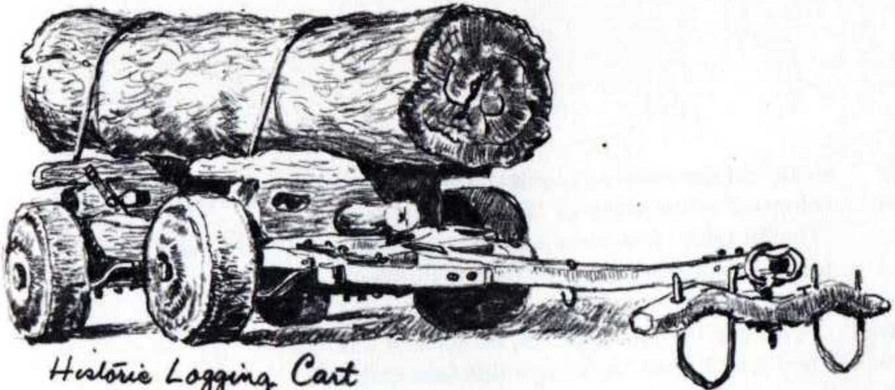
For the heavier jobs, such as ploughing and making the irrigation channels, there were steam-driven traction engines. They often had colourful names, such as 'The General' and 'The Dragon'. One that was good at pulling Mallee roots from the ground was dubbed 'The Dentist'.

Traction engines could do all sorts of jobs. They could draw the scoops that cut irrigation channels through the rich red soil. When a cleared block was to be ploughed, a common practice was to put two traction engines at opposite ends of the field so they could winch the plough back and forth. The plough itself was specially designed to work in both directions.

Being steam powered, traction engines needed only fallen timber for fuel. They could tow enormous trailers loaded high with the firewood needed to drive the irrigation pumps.

In time the traction engine gave way to the smaller, more powerful and more manoeuvrable tractors powered by internal combustion engines. Modern tractors are adaptable to almost every task that needs to be done in the vineyard.

Special cultivating attachments run along under the trellises removing weeds but moving gently aside when they came to a vine. Tractors haul the trailers used to bring in the harvested

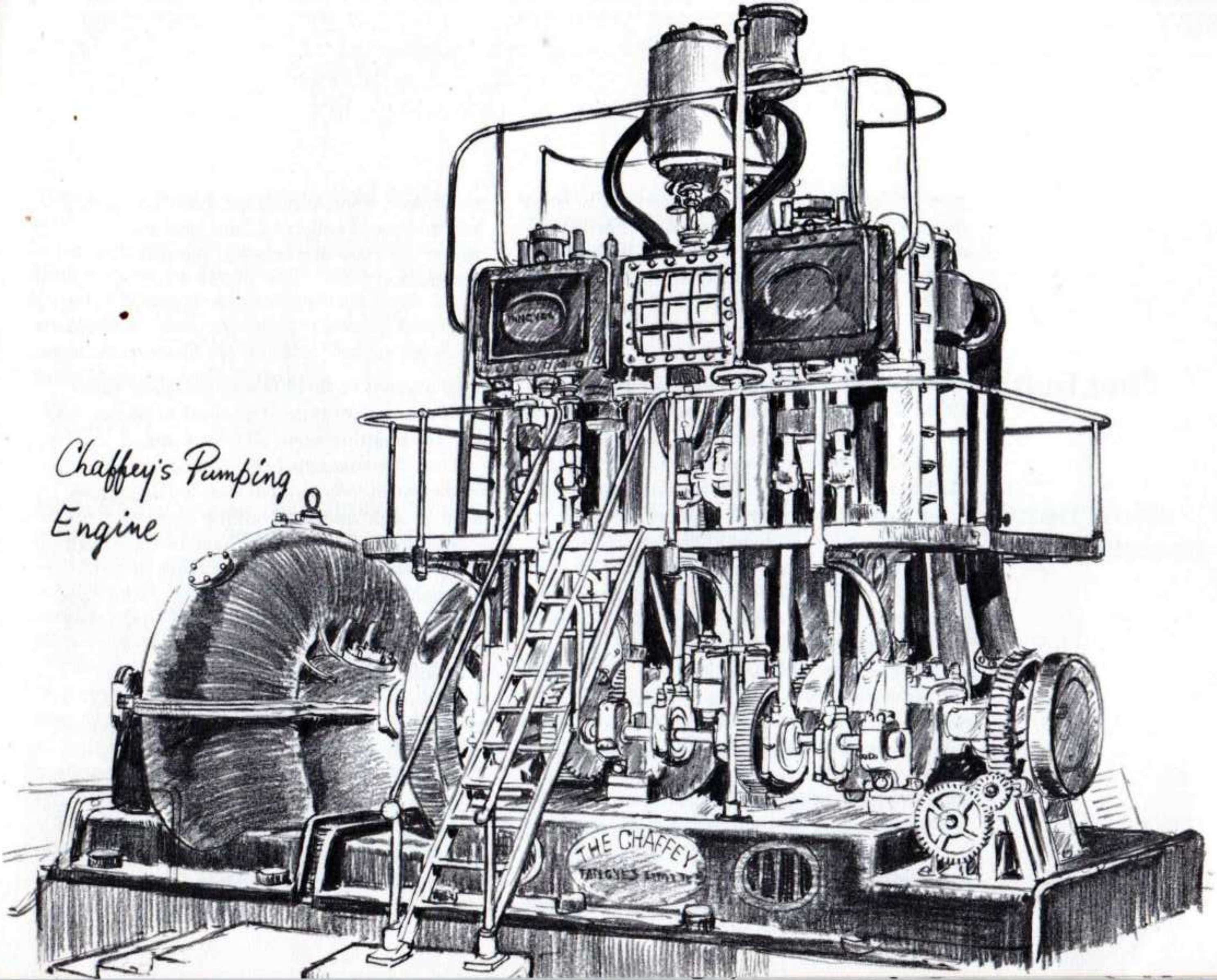


Historic Logging Cart



'Mallee Roller'.

Used on sheep stations to flatten scrub in order to feed stock and clear the land -- Drawn by a team of Bullocks



Chaffey's Pumping Engine

grapes. Tractors power the pumps used to spray the grapes against insect pests and to help the drying process. Tractors power the shakers that send the dried fruit bouncing through the racks. And tractors haul the giant mechanical harvesters and collection bins that are appearing more and more in Australia's vineyards.

First fruits

Mildura's first fruits were ready for market in 1893. Trees sagged under the weight of oranges, peaches and plums. Vines were luxuriant with grapes. Mildura fruit won six first prizes at the Melbourne Royal Agricultural show that year.

But suddenly the water level on the Murray fell and the riverboats could not run. Instead of a gentle trip by paddle steamer to the railhead at Swan Hill, the delicate Bartlett pears and Elberta peaches were jolted by dray for three days in the midsummer sun. In Melbourne they were worthless.

Mildura's whole planning and development depended on railway connection with the outside world. Politicians had promised one, of course, and there were plans and estimates for it on the table of Parliament House in Melbourne, but plans and estimates could not transport fruit. Mildura would have to wait ten more years for its railway.

Worse problems were to come. Many of the trees planted in those first enthusiastic days were not true to type. They had to be dug out and the planting done all over again.

Then the channels began to leak, their walls weakened by Murray yabbies. Salt began to seep through the earth, killing trees.

Mildura's settlers might have overcome all these problems. But the bank crash of 1893 was more than the new settlement could cope with. Utter failure was all that seemed left of the dreams of five years before.

People began to leave Mildura. Many settlers simply walked off their blocks. The hopes of Mildura now seemed slight compared with the hopes offering at the gold-mines of Coolgardie and Kalgoorlie, in Western Australia.

Those who stayed seemed to lose heart. They neglected the channels. They did not seem concerned that the rabbits were coming back and eating their vines. Mildura was in danger of becoming once again nothing more than a

'Sahara of hissing hot winds and red driving sand'.

Disheartened, George Chaffey in 1896 went back to America. His younger brother, William, stayed, working as a labourer in his fields alongside his two elder sons, whom he brought home from school the day the Chaffey offices in Mildura closed their doors.

Like everybody else, W. B. Chaffey had to root out his vines and trees, and replant. He stayed on in his mansion-like home, Rio Vista, only because he could not find a buyer for it. At one stage, he had to sell a team of horses and a buggy for one-sixth of their value just to buy bread.

Dried fruits to the rescue

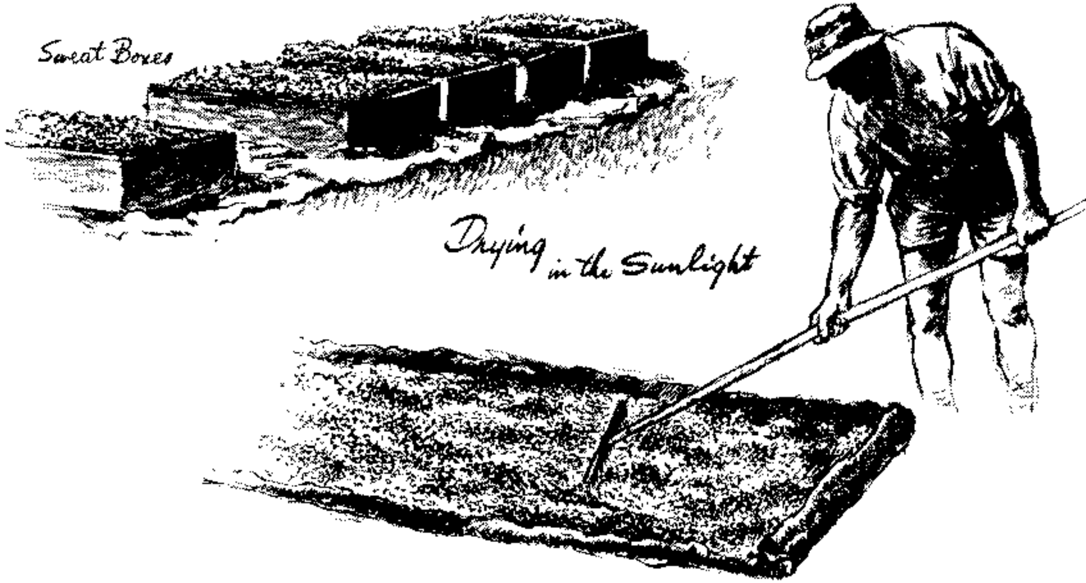
Mildura's fruit growers soon realised that they must preserve their fruit in some way. Only then could it survive the long haul to market or the long wait for the river to rise and the paddle boats to start running again. The only preserving method available to them was drying.

They had little knowledge of the techniques of drying and only the crudest facilities. But they did their best. Men and women and boys and girls spread grapes in the sun to dry. They produced clusters of muscatels of the kind that appealed to the Christmas trade.

But the Christmas trade could not be expected to keep the industry going. The only other way to dry grapes without dipping techniques was as lexias, or pudding raisins, and the market for these was limited.

In attempts to produce marketable dried stone fruits, the growers sliced and dried apricots, but found they turned out too moist or too dry or mouldy.

The Chaffeys, always leaders, brought in experts who knew how to dry fruit by the hot caustic dip method. They also introduced two small stemming, grading and winnowing machines from America, with a cone and riddle and meshes, one man turning the handle while another fed in fruit. The revolving cone knocked the stems off, the blast of air from the winnower blew them away and the riddles graded the fruit before it fell into the boxes. But many of the growers had to make do with whatever



Sweat Boxes

Drying in the Sunlight



Stripped Vines

implements they could find on hand. One man sieved his grapes through the mattress of an old double bed.

In those pre-Federation days, Victoria seemed to be the only market. New South Wales banned the import of fresh grapes and had a prohibitive duty on dried.

Inventive growers found a way around this. They set up furnaces along the river bank and dipped their grapes in boiling lye. Customs agents certified the grapes as cooked, which were quite different to fresh, and allowed them into New South Wales duty free. The growers pulleyed the cooked grapes across the Murray and spread them out on hessian to be dried in New South Wales. Then they sent them to be sold in Sydney.

About this time too some growers introduced the true sultana, an oval, seedless, greenish-yellow grape, which came originally from Soultanieh in Persia. It was to become the major variety grown in Mildura.

One of the biggest advances in the quality of Australian dried fruit occurred in 1922, when a party of Greek immigrants arrived at Mildura. They brought with them the secret of the cold dip, an emulsion of olive oil and carbonate of potash, to retain full fruit flavour and fleshiness. Olive oil gave texture, carbonate of potash gave colour, and the sun gave that golden bloom that made Australian sultanas five crown, equal to the world's best.


Hand Picking


The Monster
Grape Harvester

An art born in antiquity

In bringing irrigation to Mildura, the Chaffeys were practising an art born in antiquity.

Irrigation was first practised in arid countries where there were rivers that annually overflowed their banks, such as the Nile, the Tigris and Euphrates, the Indus and the rivers of China.

The Pharaohs of Egypt built huge earth dykes and made large basins for storing Nile waters needed for irrigation. They measured the height of the river from year to year, and their marks of the Nile level are still to be found on the rocks of its Second Cataract.

The Sumerians learned to control the spring freshets of the Euphrates with dykes, to distribute the water into irrigation trenches, and thereby to reap large harvests of grain. Documents that have come down to us from the Sumerian city kingdoms show that one of the most important responsibilities of their leaders was to keep the irrigation canals and dykes repaired.

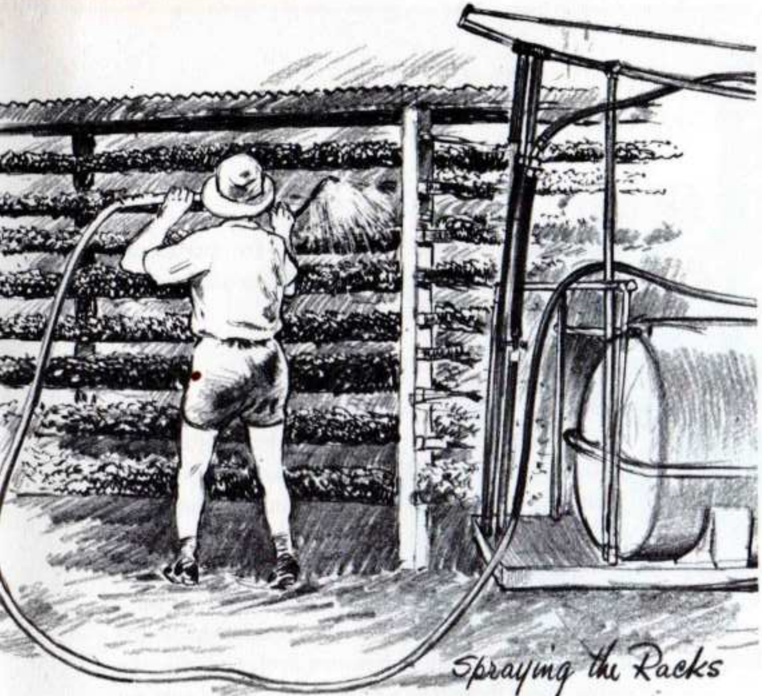
Assyrian engineers built a great irrigation system to carry water 50 kilometres from the mountains to the fields around Nineveh. Their work included an aquaduct nearly 300 metres long and 25 metres wide, to carry the water across a river and its valley. King Sennacherib used water from the system to irrigate the fine gardens he laid out along the river above and below Nineveh, where he planted strange trees and plants from all quarters of his great Empire.

The Chinese knew the secrets of irrigation. So too did the Aztecs of Mexico and the early inhabitants of Arizona.

To overcome the limits of flow irrigation, early irrigators developed primitive apparatus for lifting water. One of the simplest is a bucket and counterpoise attached to the ends of a pivoted pole. Pictures of this device, similar in form to those still in use today, appear in a tomb at Thebes dating from about 1250 BC. It was called a shadoof in Egypt and a denkil or paecottah in India.

A more advanced idea is the Persian wheel, known as a sakiya in Egypt and harak in northern India. It consists of a chain of buckets passing over a vertical wheel and dipping into the water. An animal walking in a circle drives a horizontal wheel that is geared to the vertical one. Or it can be driven simply by a man walking on the buckets as though they were steps.

Such devices of course depended on water being available. It was because of this that the idea of building dams to store water grew up.



Spraying the Racks



OBST Dip

Wherever possible, water is stored in such a way that it can gravitate on to the fields to be irrigated. But in most cases at least some method of raising the water is required. In Australia's irrigation areas, electrically driven pumps are usually used nowadays.

Pickers

By mid-February each year the grapes of Chaffey's Kingdom are ready for picking, a process that goes on until the end of March.

Sunraysia's normal population of about 40 000 swells by another 4 000 or so as pickers arrive from all over Australia. They come by car, by truck, by bus, by train. Special pickers' trains run from Melbourne at the start of the picking season.

Many pickers bring caravans with them, but most live in quarters provided by the growers on their properties.

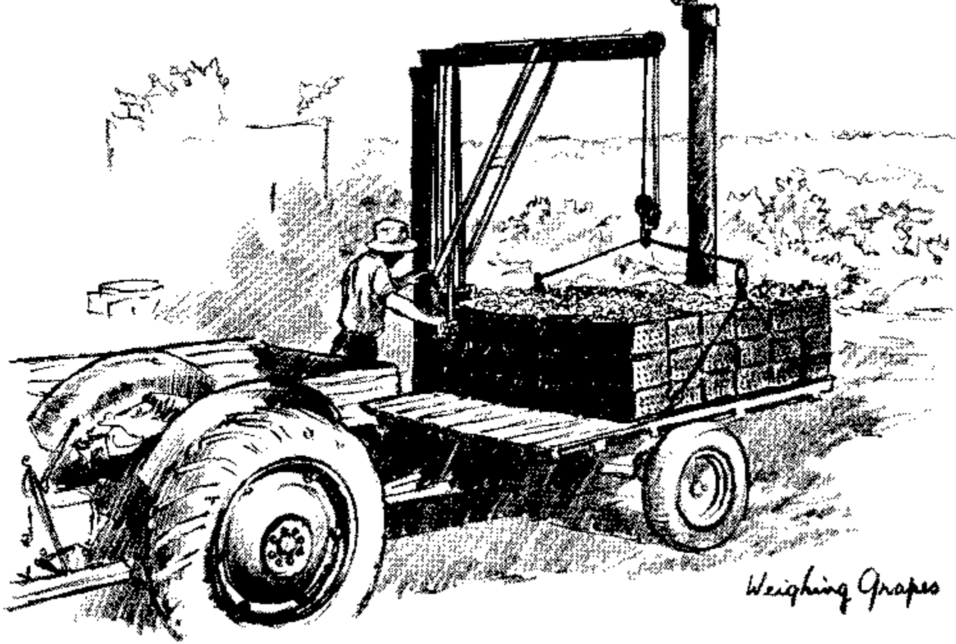
Pickers usually work in pairs, one on each side of a row of vines. Fingers fly as pickers use their favourite knives and their favourite styles to separate the heavy bunches of grapes from the vine and drop them into perforated dip tins. It's a hot, sticky, dusty job in the summer heat that brings the grapes to their full ripeness.

At some stage, the grapes must be dipped or sprayed with a special solution that helps the drying process and produces a beautiful colour in the fruit. The solution contains carbonate of potash to break down the bloom on the skins of the grapes, and drying oil.

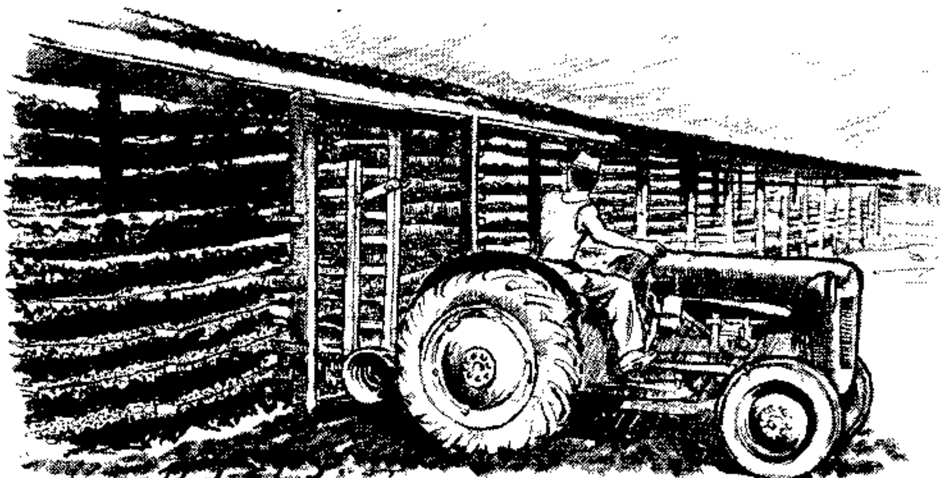
Some growers have trailers with special dipping troughs. The perforated dip tins are immersed in these as they are gathered from the vineyard. Other growers prefer to dip the entire load from the trailer in a tank built for the purpose. Still others wait until the grapes are spread on the drying racks and spray them with the drying solution.

Because of the shortage of labour and its high cost, more and more growers are turning to mechanical harvesters. When these are to be used for dried fruits, the grape stems are severed and the fruit left on the trellis, where it is sprayed and allowed to dry.

The mechanical harvester straddles and moves along the trellis, shaking the fruit on to conveyors below, for transport to a bin that travels with the harvester. Fruit dried and



Weighing Grapes



Rack Shaking

harvested in this way sometimes goes straight to the packing house, but sometimes it needs further dehydration.

Grapes picked by hand are spread on drying racks about 50 metres long and about a metre wide, usually ten tiers of wire netting high. Each of these racks holds about three tonnes of dried sultanas.

In normal weather, sultanas stay on the racks for about twelve days. Growers keep an anxious eye on the weather while their fruit is drying, for rain at this time could mean the complete loss of their crop.

When the sultanas are dry they are shaken through the racks, either by manpower or mechanical shakers attached to tractors. Then the grower spreads the fruit on hessian in the sun for another day or two for a final drying out before it goes to the packing shed.

Packers

In the packing shed, government inspectors grade the fruit against carefully controlled samples.

All grading is done in specially constructed rooms with walls of a standard powder blue, and special fluorescent lights at a standard height. This eliminates problems that could arise if fruit had to be graded in varying conditions of natural light, for colour is one of the major considerations in deciding quality.

Modern packing sheds are highly mechanised from the moment electric grabs lift the full boxes of dried grapes from the incoming trucks. They are places of unabated din.

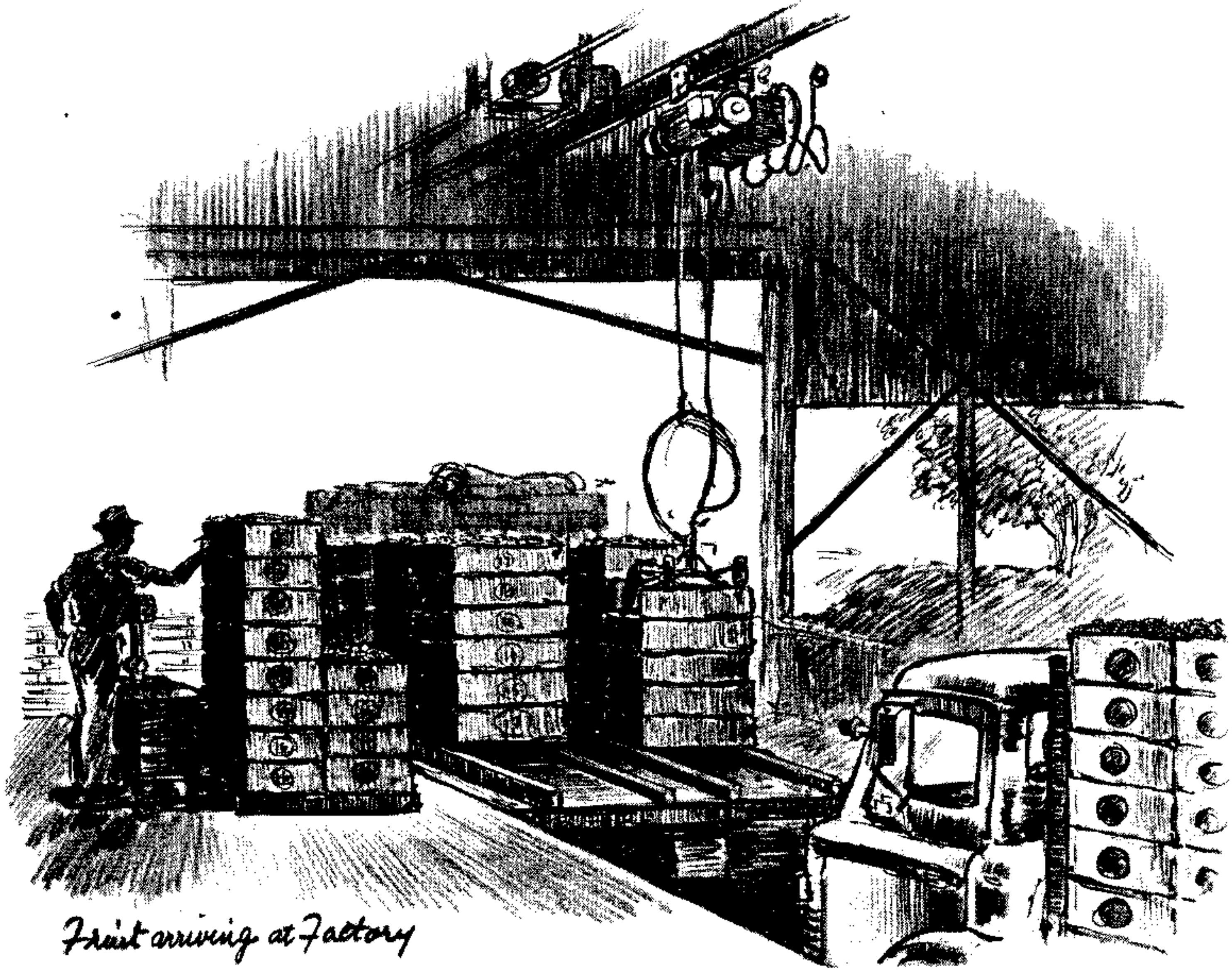
Elevators clank endlessly towards the ceiling and then down again. Riddle screens rattle. Whirring drums whine. The only quiet spots are the enclosed laboratories and quality control booths.

The packing process begins with removal of the stalks.

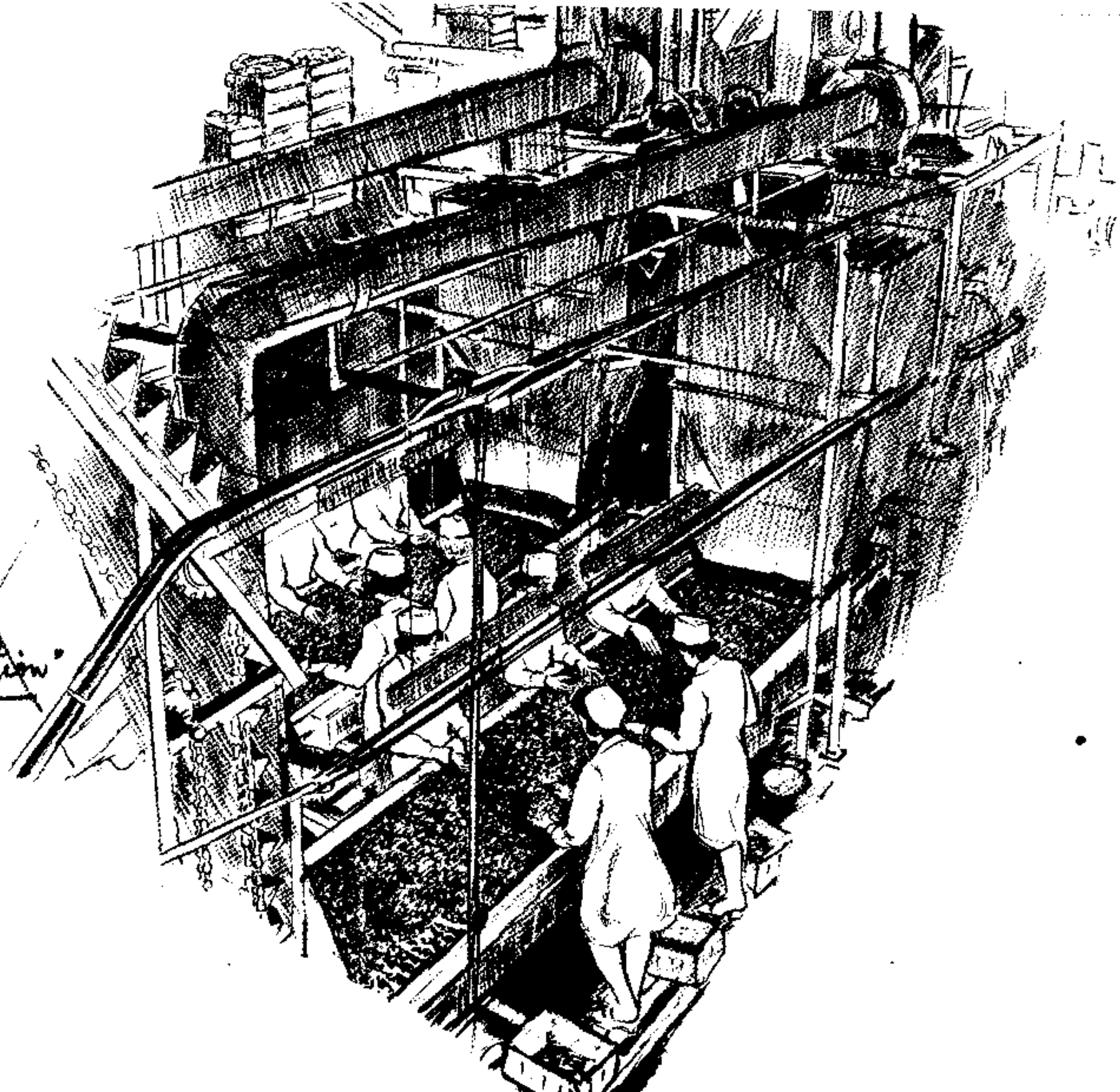
The first step is disposal of any heavy stems that have remained after rack shaking in the vineyard. This is done by running the fruit over a series of oscillating rods.

From these, the fruit travels to a double metal cone for the second process, removing the fine, light stalks attached to individual berries.

The inner cone is solid and fitted with beaters. It spins at 500 revolutions a minute



Fruit arriving at Factory



"Inspection"

and throws the fruit against the outer cone of screen wire to dislodge the stems without injuring the berries.

In the third operation to complete stem removal, the fruit is shaken through a series of screens and finely adjusted heavy fans blow away both stems and underweight berries.

After this extensive dry cleaning, the fruit moves into a water washing stage to remove all dirt and grit. A horizontal drier then removes excess moisture.

The fruit then moves over shaker tables that grade it for size. Finally it goes on to endless belts on the picking tables where sharp-eyed, nimble-fingered operators remove discoloured fruit or any foreign object that has so far evaded the cleaning process.

A final emulsion spray and spin dry, and the fruit is ready for packing and presentation to the government inspector who has the final say on whether the packed fruit is ready for the market.

Until the fruit leaves the storage to be sold, it is fumigated regularly to protect it from insect pests. Voluminous plastic tents are placed over the stocks and a highly permeable fumigant used.

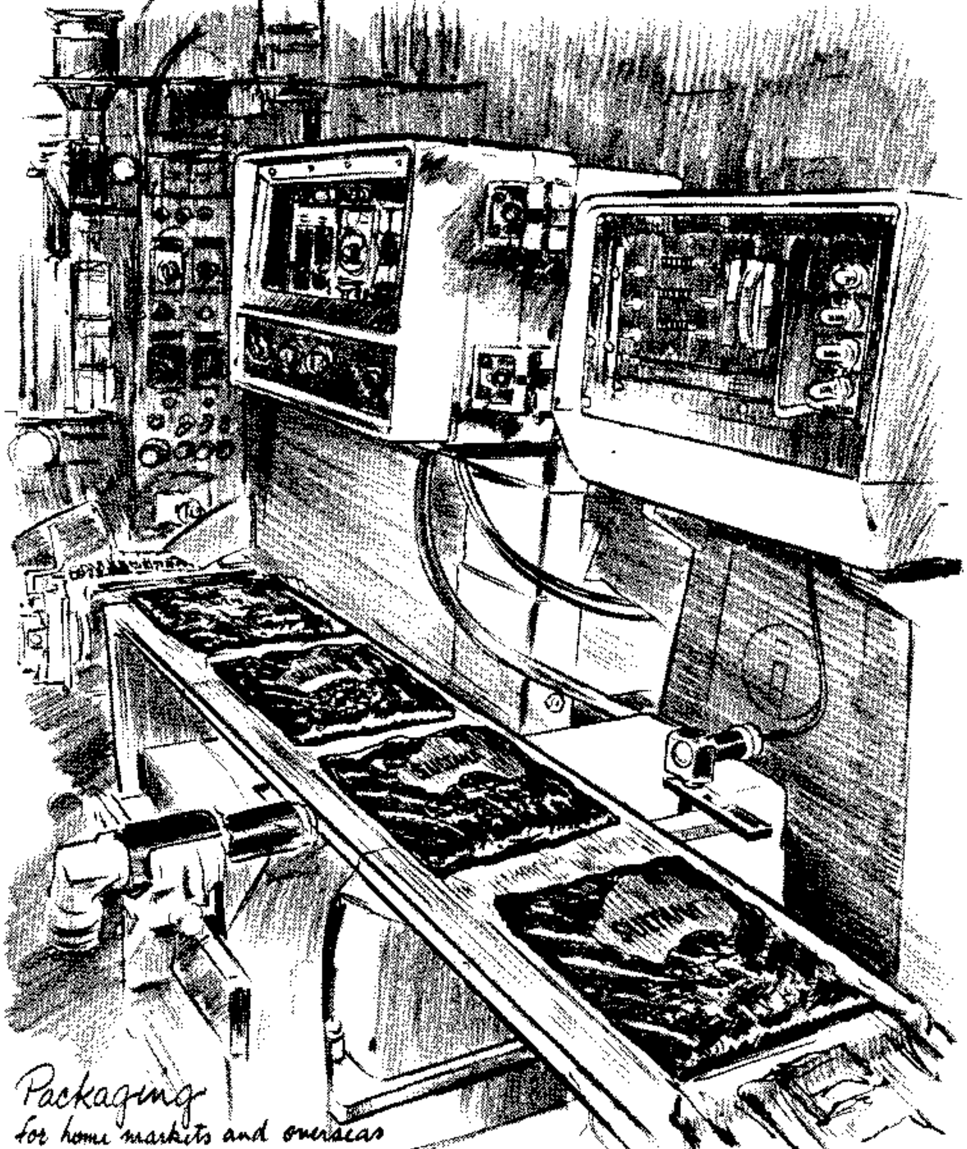
Much of the crop is nowadays despatched in shipping containers.



SULTANAS



PEARS



Packaging
for home markets and overseas

Currants, sultanas and raisins

The grape is a versatile fruit. In its dried form it can come as a currant, sultana or raisin.

When the harvest begins in mid-February, the currants or Corinth-type grapes are picked first. The tiny purple currant grape is so small that it dries satisfactorily without any dipping at all. Most currants are used in bakery goods, such as in the familiar currant buns.

Sultanas follow. They are made from seedless Sultana grapes which are either dipped in or sprayed with a solution of emulsified oils and potash to help drying and bring out the golden colour.

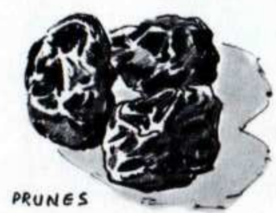
Then come raisins, of the Muscat Gordo Blanco and Waltham Cross varieties. They need a different special dip or spray to split their tough skins as a preliminary to drying. Special machines remove their seeds before they are packed.

Apricots for drying are picked when they reach the right degree of ripeness, then halved and stoned with a special knife. The wooden trays in which they are placed are dampened and stacked in sulphur houses to help retain their lush golden colour and flavour. After this treatment, the trays are laid in the sun for drying.

Prunes are made from special varieties of plum. These are usually shaken from the trees by mechanical shakers that grip the tree trunk and vibrate the fruit into catching sheets. The fruit is then washed and placed in dehydrators, where it is dried by a blast of hot air lasting from fourteen to twenty-four hours. The loss of so much moisture gives the prunes their wrinkled appearance.

Other dried fruits grown in the Sunraysia and Riverland areas include peaches, nectarines and pears.

Australian dried fruits contain natural sugar and are an ideal health food. They are rich in iron, calcium, protein, thiamine, carotene, niacin, riboflavin and Vitamin C. Their natural sugar content gives quick energy because the body can absorb it immediately. And they taste delicious.



Sun dried science

Scientific methods have played a major part in the progress of Australia's dried fruit industry.

The Commonwealth Scientific and Industrial Research Organisation has operated a viticultural research station at Merbein, in the heart of Sunraysia, for fifty years. Other research is sponsored and conducted by grower organisations, and state government Departments of Agriculture. These include the CSIRO Food Research Laboratories at Ryde, NSW, and the Victorian Department of Agriculture Plant Research Laboratory at Irymple, which specialises in biological control of insect pests. The Australian Dried Fruits Association's viticulture nursery at Irymple produces vine root stock that resists insect attack.

Research into soils, irrigation practices, drainage, viticulture techniques, crop forecasting, drying and packing has enabled the Australian Dried Fruits Industry to become one of the most efficient and productive in the world.

Research has developed techniques that can forecast the potential fruitfulness of a crop as much as eight months before harvest. And improved methods of pruning and cultivation have produced excellent results.

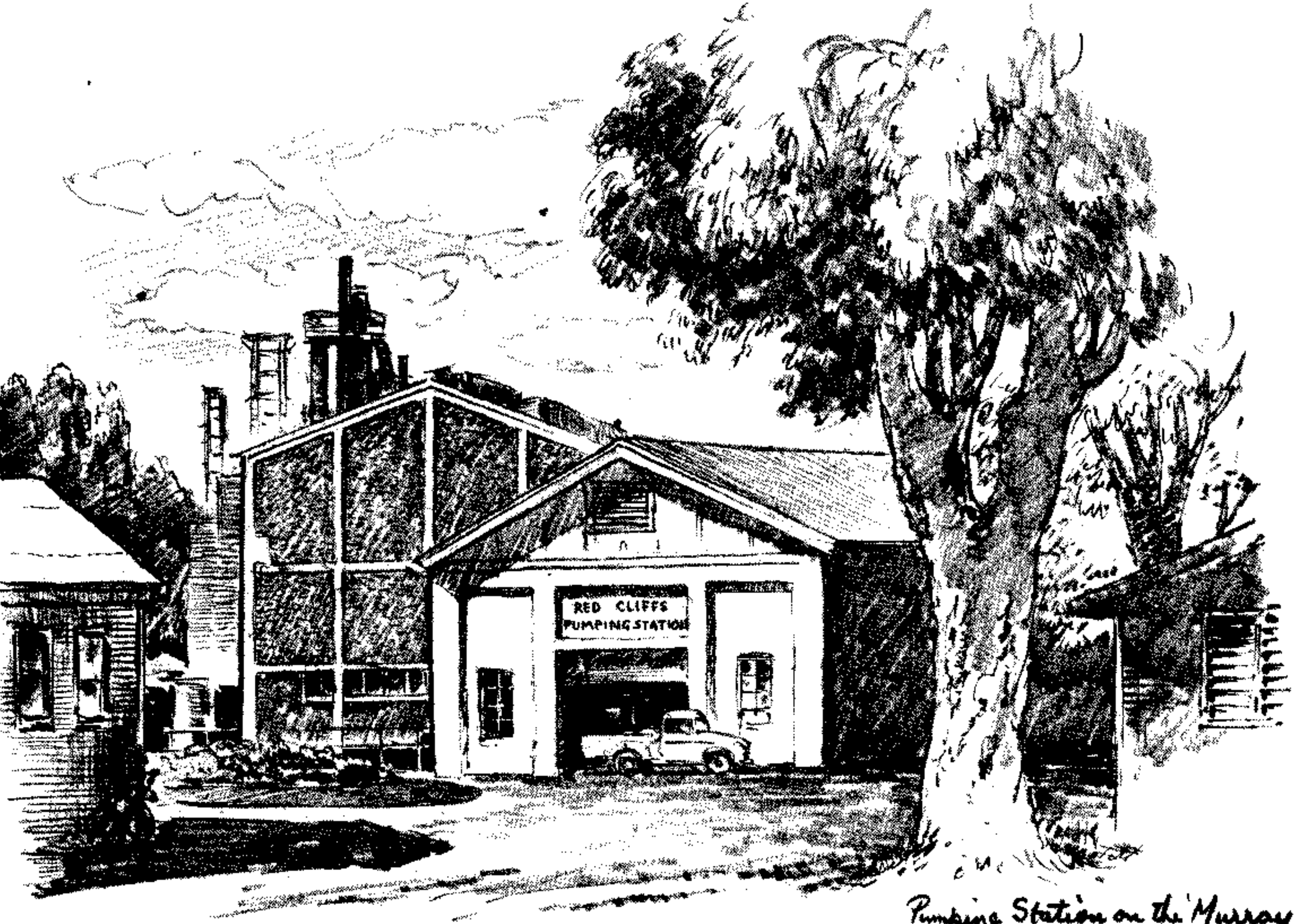
Such extensive research has led to reduced labour input, lower costs and a better, more nutritious body-building product.

From steam to electricity

Sunraysia's pumps usually start in mid-August and keep going until the autumn watering which takes place just after picking.

From Sunraysia's first days until the 1950s, the wood-fired steam engines designed by George Chaffey and installed at Nichol's Point, King's Billabong and Psyche Bend supplied much of the power for the district's pumps. When the soldier settlements at Merbein and Red Cliffs were established, they too had steam turbines to drive their pumps.

In 1955 an all-electric central station took over from the King's Billabong and Nichol's Point pumps. The Billabong engine still stands, silent but proud, on the banks of the Murray opposite Rio Vista, almost in the heart of



Pumping Station on the 'Murray'.

Mildura. Meanwhile, the Merbein and Red Cliffs stations had been converted to electric operation.

The last steam-driven pump ran at Psyche Bend until the end of the April 1959 watering, when it was finally turned off by Mr W. H. Chaffey, then the only living son of W. B. Chaffey. It still stands in its original position, next to the electric equipment that replaced it.

Once the pumps start they run day and night throughout an irrigation, lifting great volumes of water from the river and feeding it into the main channels, from which it runs into subsidiary channels and finally on to each property. Once it is on his property the owner controls it, running it down each side of every row of vines.

Many of the irrigation channels are being replaced with pipelines, which are much easier to maintain and operate.

Riverland: Chaffey's other kingdom

When some members of Victoria's Parliament opposed the Chaffey's plans, neighbouring South Australia was quick to invite the Canadians to start their irrigation settlement on that part of the Murray that lay across the border. On 14 February 1887 the Chaffeys signed an agreement with the South Australian Government by which they secured a large area of land.

Victoria soon invited the Chaffeys back, with the result that they faced the challenge of developing twin irrigation settlements, both on the Murray, but on opposite sides of a colonial border. At the centre of the South Australian settlement surveyors were soon laying out a town named Renmark, on the same plan as Mildura, its avenues named and its streets numbered, with a square and a river curve. Renmark thus became Australia's first irrigation settlement.

Renmark's pioneers developed it more cautiously than Mildura's, planting mainly stone fruits and currants. Because of the smaller quantities, and because it was only 110 kilometres from the rail at Morgan and nearer its major market of Adelaide, Renmark escaped the worst of the transport and marketing problems suffered by Mildura.

Adelaide bakers even preferred Renmark currants, for being young and small they went more to the bun.

As well as producing grapes and stone fruits for drying, the district developed many related industries.

Renmark became one of Australia's leading producers of citrus, and 'Oranges thrive at Renmark' a heading in children's copy book exercises in South Australian schools. Renmark oranges were first to reach Adelaide and Melbourne markets each year. Many of them came to bear the brand 'Riverland'.



APRICOTS



RAISINS

Like Mildura, Renmark was at first a town without liquor. But this caused constant unrest, and Renmark solved the problem in 1897 by establishing the first community-run hotel in the British Empire, its profits being used to improve the town. Community hotels are still a feature of the Riverland area.

Other towns developed in the area, with Berri, Barmera, Loxton and Waikerie taking up their positions on or near the Murray.

Berri began as the site of a wood pile to supply fuel for the riverboats. The demand for this declined, so the owner of the depot in 1906 began to grow onions and fruit. His success showed the potential of the district for irrigation.

Berri has Australia's largest packing house for dried apricots, a substantial output of glacé fruits and muscatel table raisins, a large factory for the production of fruit juices, and its co-operative winery and distillery is the largest in the southern hemisphere.

Barmera and Loxton both developed as soldier settlement areas. Barmera, the newest of South Australia's irrigation towns, is a few miles away from the Murray, on the shores of Lake Bonney.

Strength in organisation

From the industry's earliest days, Australia's dried fruit growers realised that proper industry organisations could offer benefits to both growers and consumers.

W. B. Chaffey and two friends formed the Mildura Raisin Trust in 1895, and then encouraged the formation of the Renmark Raisin Trust. The first step taken by these organisations was to establish registered packing sheds responsible for quality control. In 1907 the two Raisin Trusts merged to form the Australian Dried Fruits Association, the body to which more than nine out of ten growers still voluntarily belong.

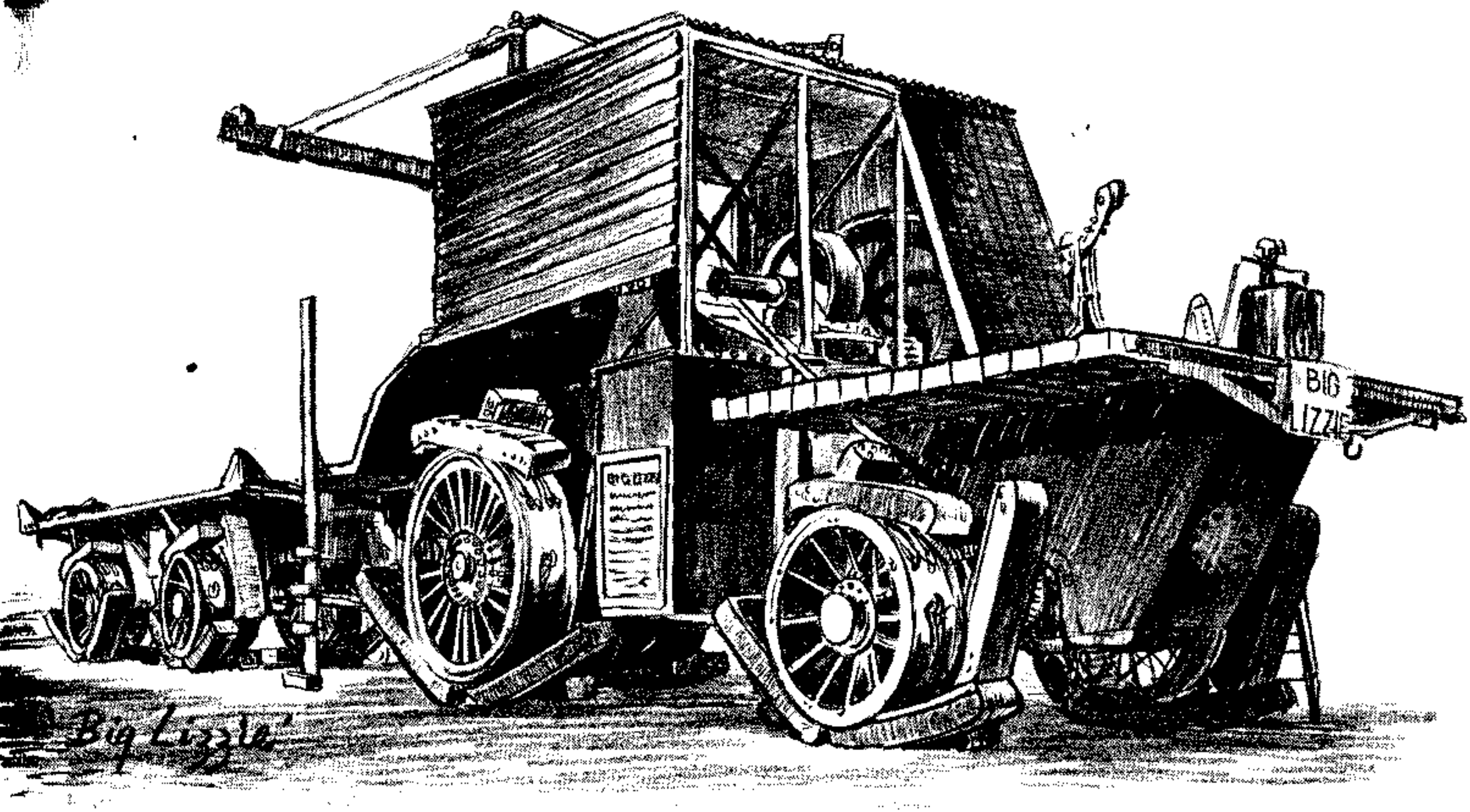
The Australian Dried Fruits Association developed steadily. It found it had a particular role to play during World War I, when many of the sources that traditionally supplied the major world markets were cut off from them. The Association managed to keep a balance between supplies reserved for the Australian market and those exported to take advantage of the booming prices then offering.

After the war, the Association gave its attention to getting soldier settlers absorbed into the industry quickly, while worldwide markets were still buoyant. It also made representations to the Commonwealth Government that led to a system of preference for Australian dried fruit within the British Commonwealth and to the passage of the *Dried Fruit Export Control Act* of 1924.

This Act was passed to organise overseas marketing of Australian dried vine fruit. The Australian Dried Fruits Control Board, consisting of growers' representatives, members with commercial experience in marketing dried fruits and a Government representative, controls the sale and distribution of dried fruit exports, recommends the licensing of exporters and contributes to dried fruit marketing overseas by its system of appraisement, regulation of shipments, and advertising. The *Dried Fruits Export Charges Act* 1924–1965 provides for a levy on exports of dried fruit to cover the Board's expenses.

Government control of the export of Australian dried fruits ensures that no box of green or old or moth-ridden or worm-infested fruit from Australia is allowed on world markets. This scrutiny extends from the farm through the packing sheds and local warehouses to consignments at the ship's side and even to storage abroad.

With government recognition, the Australian Dried Fruits Association had become a legal



organisation of growers, packers, agents and merchants, the instrument of state and federal governments, eliminating speculation and exploitation, a safeguard to producers and consumers alike.

It is still controlled by the growers. Co-operative and proprietary packing companies, agents and merchants are given representation on the Federal and State Councils, but growers have a majority. They look to delegates with technical and business knowledge to guide them, but they make their own decisions.

Not by dried fruits alone

Sunraysia does not live by dried fruits alone. With all those grapes—Pedro Ximines, Doradilla, White Hermitage—it was inevitable that the district would develop a wine industry.

Yet the high minded Chaffeys had originally ordained that Mildura would be a liquor free settlement. But its prohibition era was short lived and W. B. Chaffey himself was one of Mildura's first wine makers. He imported enough vines from South Africa in 1888 to plant 60 hectares at Irymple.

Chaffey crushed his first vintage in a bough shed at Belar Avenue, Irymple, which he chose to call Chateau Mildura. Chaffey extended his vineyards and his winery prospered. In 1914 Mildura Wines Pty Ltd moved its headquarters to Merbein, on top of a cliff overlooking the river. In time it became Mildara Wines Pty Ltd, and Mildara one of the best known wine names in Australia.

Mildara has won particular fame for its sherry, the grapes for which are Palomino, Pedro and Doradillo. It goes under such names as Rio Vista, after W. B. Chaffey's mansion, and Chestnut Teal, after a native duck found along the Murray. Mildara George is not named after George Chaffey as you might expect, but after a leading Melbourne businessman who is a good friend of Mildara.

The major wine grapes now grown in the Mildura area are Semillon and Pedro for white table wines, Doradillo and Palomino for Sherry, Shiraz and Grenache for red wines, and the luscious Gordo Blanco for Muscat.

The Sunraysia and Riverland climates and irrigation are also ideal for most varieties of citrus fruit.

The area produces over three million bushels of citrus a year. Most of the citrus fruits are oranges, either Washington navels or Valencias derived from trees planted at Mildura and Renmark by the Chaffey Brothers and Lord Ranfurly, an Irish peer, who took up land at Mildura.

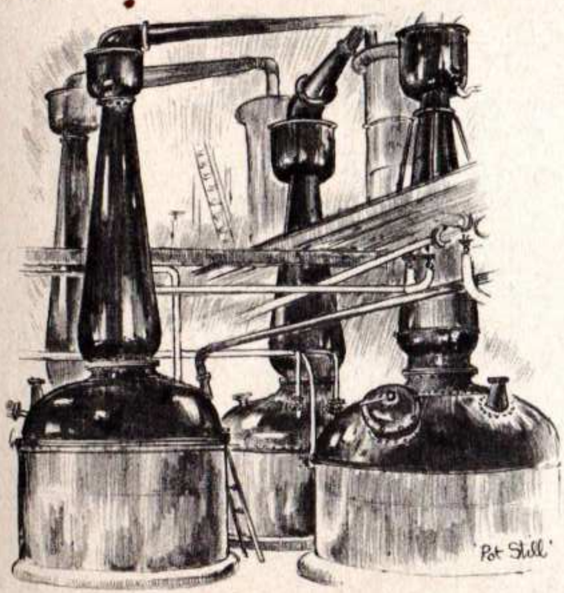
The quality of Riverland oranges is carefully preserved by maintaining the production from trees whose predigree is directly in line with those imported in the early days.

Oranges from the area are marketed nationally under such brands as Sun-tipt, Aurora, Sunraysia, Sarnia, Curlwaa, I.P.C., and Riverland.

Oranges sorted, washed and waxed for protection in Mildura can be in Sydney homes the next day thanks to swift modern transport.

Mildura is an important rail head for sheep and cattle and cereal crops. The city's stock markets are always busy. Long wheat trains drain the wheat silos that dominate the railway yards.

Mildura's year round sunshine has won it a year round industry in tourism, an industry that local entrepreneurs have nurtured by a concerted drive to provide high standards of accommodation and increased facilities.





Mildura has become a showplace town, laid out in the model American style George Chaffey knew so well. Deakin Avenue, the main thoroughfare, is straight, long and wide. Its centre section, originally reserved for a tramway, is now a pleasant plantation lined with a double row of shade trees planted by W. B. Chaffey himself.

Tourist oasis

Only Cureton Avenue, which follows the line of the Murray, breaks the geometry of the town. Otherwise Mildura is divided into neat rectangles by streets with such pleasant names as Magnolia, Lemon, Orange, Madden, Deakin, Langtree, Pine, Olive, Walnut, Palm and Cherry in one direction, with simple numbers, such as Seventh, Eighth and Ninth Streets going the other.

Deakin Avenue stretches out into the countryside and is lined with the motels that accommodate the steady stream of tourists that come to absorb the sunshine in which Sunraysia abounds.

Many local residents and visitors to Mildura see the Murray as more than just a source of waters for irrigation. To some the river means swimming. To others it is fishing for giant Murray Cod or perch and bream.

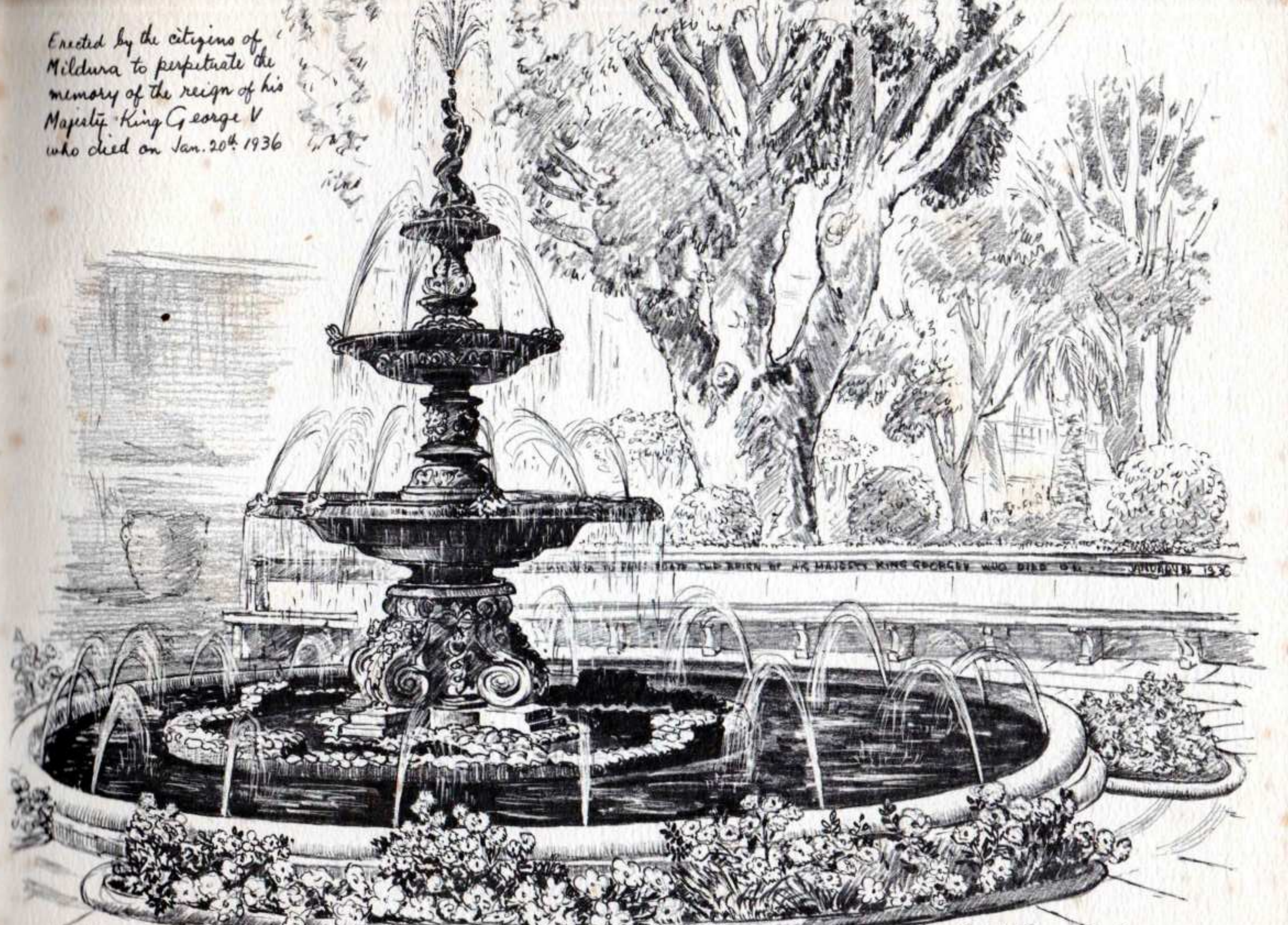
To still others it means a power boat or a paddle steamer. Water skiers love it. Others see it as a home for the region's prolific wild life. The history-minded think of it in terms of Sturt and his whaleboat, and of smugglers in the days before Federation put an end to intercolonial customs duties. Wentworth, in particular, caters for the history conscious.

Rio Vista, the mansion W. B. Chaffey built beside the Murray in 1889, has become a major tourist attraction, and the adjoining art gallery and theatre the focal points of Mildura's cultural life. Mildura's collection of paintings include works by Streeton, Degas, Brangwyn and Orpen, many of them the gift of the late Senator Elliott, a former Mildura resident. A vigorous exhibition programme brings a new display of paintings to Mildura about once a month.

The river's major attraction to many modern Sunraysia visitors is the river red gums that line their banks. Of all the eucalypts, *Eucalyptus camaldulensis* must be the most picturesque. Artists and photographers wander the river banks, comparing the shapes and colours of seemingly endless specimens on it.

The river also provides a home for myriads of pelicans, black swans, white storks, herons and wild ducks.

Many people come to savour the same climate that makes Sunraysia so ideal for the fruit that thrives there. There's an oasis quality about the place that never loses its appeal. Many of the district's visitors find much to interest them in visits to orchard, vineyard and winery, to the pumphouses and packing sheds that are part of Sunraysia's workaday life.



King George V Memorial Fountain MILDURA

Cedric Emanuel

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